

Bibliography V

The English Inflectional Endings*

Arnold M. Zwicky

A. Introductory remarks

English expresses the following nominal and verbal categories inflectionally--for nouns, nominative plural (Nom)Pl, genitive singular (Gen(Sg)), and genitive plural (GenPl); for verbs, third person singular present (Prs), present participle (PrsP), past (Pst), and past participle (PstP). For completely regular items, the stems show no change and the suffixes have the following forms--

(Nom)Pl = Gen(Sg) = GenPl = Prs: [s ~ z ~ ɪz] = S
 PrsP: [ɪŋ]
 Pst = PstP: [t ~ d ~ ɪd] = T.

In addition, there are various subregular and irregular formations. For nouns, there are 'internal' Pls (like leaves), in which stem-final continuants f θ s are voiced, as well as zero Pls (like sheep) and a number of entirely irregular forms (like oxen and seraphim, with exceptional Pl suffixes; mice and feet, with internal change; and phenomena, addenda, crises, virtuosi, formulae, and foci, with distinct Sg and Pl terminations). Zero-Pl nouns have only two distinct forms (NomSg/Pl vs. GenSg/Pl, as in sheep vs. sheep's). Internal-Pl nouns have three distinct forms, with the GenPl identical to the NomPl but distinct from the GenSg (leaf: leaves/leaves' vs. leaf's). And truly irregular nouns have four distinct forms (man, man's, men, men's).

For verbs, there are 'internal' Psts and PstPs, ending in alveolar stops (several types--hit, hid, bit, burnt, crept, built, left). In addition there are subregular formations (sank/sunk) and various irregular formations (came/come, went/gone, fought, etc.). Internal-Pst verbs, like regular ones, have the PstP identical to the Pst. Most irregular verbs have three distinct forms besides the PrsP (which is regular for all verbs).

These not very complicated facts have given rise to a number of interconnected problems in the description of English morphology. How are the regular, subregular, and irregular formations to be distinguished? In particular, how are the 'internal' formations different from the regular ones--in having different suffixes, different boundaries separating stem from suffix, segmentally different stems, stems different in their morpheme features, or some combination of these? Then, what are the underlying forms of the regular suffixes? In particular, do the S and T suffixes have a voiceless stop, a voiced

stop, or some lax vowel \tilde{V} plus a voiced stop (or even--though this is not one of the forms in alternation-- \tilde{V} plus a voiceless stop)? Is the underlying form similar for S and for T, or even for S in nouns and verbs? If there is a \tilde{V} in any of these underlying forms, what vowel is it--i, e, ə, ʌ, ɪ, some vowel not fully specified?

The English facts might also bear on general problems in morphology. There is, for instance, the question of whether inflectional categories are to be treated as separate formatives or as features, or perhaps sometimes as one and sometimes as the other. Then there is the question of what mechanisms should be used to describe sub-regularities and irregularities of various types. And of whether the selection of morpheme alternants can be accomplished by principles that operate in a group, or whether they are interspersed among syntactic or phonological rules. These, and other central questions of morphological theory in generative grammar, have been treated by only a few writers in any detail--notably, for inflection, Matthews 1972 on Latin and Bierwisch 1967 and sections of Wurzel 1970 on German; and for derivation, Chapin 1967, 1970 on English. Among more general works, we have Schwartz 1968:774-82, with suggestions for a derivational mechanism; Schindler 1972, which surveys some of the problems and literature in derivational morphology; Halle 1973, which enunciates a program for a theory of word formation; and Hoard and Sloat 1973, a review of the treatment of subregularities.

A recurring question in such studies is the first listed above--whether the ordering of affixes and the selection of morpheme alternants should be given an account by principles that refer to formatives like Pl, Prs, Neg, Nml, etc., which are generated by syntactic rules (phrase-structure or transformational), or whether such principles should refer to features of major categories, features which are segmentalized (realized as affixes) by morphological rules. The formative approach is the only one taken in early transformational grammar, while various versions of the feature approach are offered by Bierwisch, Wurzel, Matthews, and Hoard and Sloat 1973b. A further development of the feature approach is Postal's 1966 proposal that some clitic elements (in particular, the English definite article the) are segmentalized; this position is reviewed in Stockwell, Schachter, and Partee 1973:67-70. For our purposes here, it is sufficient to note that the precise form of morphological rules is by no means settled, that different affixes or classes of affixes might require different treatments, and that these questions are bound up with others (among them, exceptionality, rule ordering, and lexical redundancy rules); the relevance of the English inflectional endings to such larger questions has not been explored in any depth.

B. The literature

The bulk of the literature focuses on selecting basic or underlying forms for the morphemes S and T.¹ Early discussions appear to rely on two simplifying assumptions: (i) S has the same underlying form in all of its functions, as does T; (ii) the underlying forms for S and T are parallel. These assumptions narrow the possible underlying forms to four sets: /s t/, /z d/, /Vs Vt/, /Vz Vd/. Of these, /Vs Vt/ doesn't represent one of the actually occurring forms and so

would not be chosen as the underlying form unless the other alternatives were found to be unsatisfactory; and choosing /s t/ would make it very difficult to predict final voicing in forms like pens and penned, since English permits both voiced and voiceless finals after sonorants (cf. pence and pent). Consequently, for some time the only real discussion concerned the choice between /z d/ and /Vz Vd/.

The vowelless analysis for S is defended by Hockett 1958:282, on the grounds that setting up /əz/ as the underlying form would make it difficult to predict that [z] is the form that occurs after vowels, since English permits both [z] and [əz] after vowels (cf. bows and boas). That is, only with underlying /z/ would the selection of the allomorphs be automatic ('The discovery that an alternation is automatic, and the discovery of the base form, go hand in hand, each implied by the other').

The vowel analysis was first defended by Bloomfield 1933:212, citing 'an exact parallel in English syntax', namely the forms of the verbal auxiliary is. Nida 1948:sec. 3.03 gives the argument in some detail.

Each of these positions is represented in the generative literature. The vowelless analysis is assumed without argument by some writers (for example, Labov 1969). The vowel analysis is maintained by Luelsdorff 1969 and Zwicky 1970a:333f., who give Bloomfield's argument appealing to the parallel between the forms of S and the forms of is.

Lightner 1970 refines the discussion in several ways. First, he exposes the difficulties with the /s/ and /Vs/ analysis for S. Next, he attacks the identification of auxiliary reduction with the selection of forms of S, citing a number of conditions on auxiliary reduction (from King 1970, Lakoff 1970a, Zwicky 1970a, and Baker 1971) which do not apply to S (in particular, auxiliary reduction is never obligatory,² while the selection of forms of S is never optional) and difficulties that arise from treating is and has as themselves containing occurrences of S, so that in the vowel analysis a double deletion is required to get from /kæt#i#iz/ to [kæts]. The latter difficulty could perhaps be avoided by treating is and has as having Ø forms of Prs (like the modals), or by having contraction apply cyclically. The former difficulty is more serious, in the absence of parallel cases (rules that are obligatory for certain morphemes, optional and hedged with nonphonological conditions for others). Lightner's comments do not, however, decide between the vowelless and the vowel analyses; the vowelless analysis would require a deletion rule (auxiliary reduction) plus an insertion rule or rules (for S after s z š ž c ĵ, for T after t d), while the vowel analysis would have two deletion rules (auxiliary reduction plus deletion except in the cases just mentioned). Neither of these solutions is necessarily suspect on universal grounds, since a number of languages have been claimed to have two or more somewhat similar deletion rules (see the English examples in Zwicky 1972, for instance) and others to have deletion and insertion rules with related effects (compare the treatment of German e by Wurzel 1970:Part 3).³

Lightner also claims that 'poetic forms like winged chariot (with disyllabic winged) are of no help here because the extra vowel of [-ɪd] could be derived equally well by relaxing the conditions either of vowel-insertion or of vowel-deletion' (516). But Miner 1972:19f. points out that if such poetic forms--and disyllabic adjectives like crooked, wretched, aged, jagged--are taken to have underlying /ɪd/, then these forms are simple exceptions to a vowel deletion rule, whereas if the underlying representation is /d/, a vowel insertion rule must be extended to apply in new environments and these forms must be marked to undergo the extended rule.

Let us return to the differences between auxiliary reduction and the selection of forms of S. One way around this difficulty is suggested in Zwicky 1970a, where it is proposed that auxiliary reduction is, in effect, a syntactic rule that provides the input for a later phonological rule: 'the optional rule Auxiliary Reduction merely makes the auxiliary clitic to the preceding word...The deletion of the vowel would then be accomplished by an obligatory rule also operative in the plurals of nouns, the past tense of verbs, etc.' (333). Auxiliary reduction would then be a word-forming operation, presumably a readjustment rule (Chomsky and Halle 1968:9-11 and elsewhere) which reorganizes constituent structure without adding, deleting, or permuting elements (a 'rewiring transformation', in the terminology of Humberstone 1972); a similar treatment is suggested for negative contraction in Zwicky 1969:sec. 7, 1970a:fn. 7. However, independent arguments for a rewiring transformation of auxiliary reduction have not been given, as Shibatani 1972:121 has pointed out.

Shibatani defends the vowelless analysis by reference to two new sorts of considerations--forms from nonstandard dialects and the effects of surface phonetic constraints. First, Shibatani cites the observation of Labov 1969 and others that many Black English speakers distinguish contracted forms from inflected ones--fish is being realized as [fis] or [fisɪz], but the Pl of fish as [fisɪz] only. This argues against the direct identification of the two rules in Black English, although it is consistent with auxiliary reduction as a readjustment rule. Second, Shibatani mentions a discussion by Wolfram 1970 of final stop clusters in Black English. Wolfram notes that the final t and k in forms like test and desk are regularly deleted, but often remain before words beginning with vowels or suffixes beginning with vowels; however, the final stop is always deleted in the Pl ([tesɪ]-[tesɪz], [desɪ]-[desɪz]), which indicates that the Pl affix has no vowel. I see no satisfying way to account for these data in the vowel analysis, even supplemented by Fasold's 1971 proposal that the optional nonappearance of S in Black English is the result of a syntactic deletion rule while the nonappearance of T results from phonological deletions.

These arguments from Black English do not necessarily bear on the underlying representations for the standard dialect, of course. We are not obliged to posit identical underlying forms for all dialects (see the brief discussion by St. Clair 1973), although the distribution of forms and rules throughout the dialects should be capable of historical explanation. In this connection, an account of the history of Modern English S from Early Middle English *es* might

illuminate our discussion (see the remarks by Miner 1972:13f. on both S and T).

Shibatani's reference to surface phonetic constraints (SPCs), independent constraints representing the phonetic pattern of a language (Shibatani 1973), permits him to revive Hockett's argument for the vowelless analysis of S:⁴ if English has the phonotactic conditions

- $$\begin{aligned} (1) \quad & \sim \begin{bmatrix} -\text{son} \\ -\text{aved} \end{bmatrix} \begin{bmatrix} -\text{son} \\ -\text{aved} \end{bmatrix} \quad \# \# \\ (2) \quad & \sim \begin{bmatrix} +\text{stri} \\ +\text{cor} \end{bmatrix} \begin{bmatrix} +\text{stri} \\ +\text{cor} \end{bmatrix} \end{aligned}$$

then

the base form or phonological representation of the plural must be /z/. This is because it is the only representation that involves processes which can be accounted for by the phonotactic conditions...The underlying form is derived just in case it comes in conflict with [(1)]. A schwa is inserted when two sibilants come next to each other [(2)]: No other processes are involved. (123)

The force of this argument depends on (a) the degree to which the need for SPCs in general has been motivated, (b) the arguments that (1) and (2) must be stated as SPCs in a phonological description of English, and (c) the implicit claim that SPCs should correspond to positive effects of rules rather than negative conditions (restrictions) on rules. Concerning point (c), note that a restriction on a vowel deletion rule would express SPC(2) just as much as the operation of a vowel insertion rule would, although the existence of the rule as a whole would not be motivated by (2). But we cannot expect rules as wholes always to be motivated by SPCs; standard examples of conspiracies (in the sense of Kisseberth 1970) involve the achievement of a target both by the positive action of some rules and by restrictions on others (note the discussion of the Yawelmani clustering condition by Kisseberth 1970:299, applied to the deletion and insertion analyses for the English inflectional endings by Miner 1972:22f.).

All the authors thus far cited appear to hold the assumptions (i) and (ii) at the beginning of this section (that each affix has the same underlying form in all of its functions and that the underlying forms of the two affixes are parallel). However, some analysts, notably Hoard and Sloat in a number of articles, reject these hypotheses of parallelism. First, there is Sloat and Hoard 1971, which fixes on /z/ for Pl, /s/ for Gen and Prs, and /t/ for Pst; all underlying forms are vowelless, but they are not otherwise parallel. The arguments Sloat and Hoard give are based on two considerations: markedness à la Chomsky and Halle 1968:ch. 9 and the properties of internal Pls and Psts. Markedness considerations would favor voiceless underlying consonants over voiced ones. To accommodate internal Pls and Psts, Sloat and Hoard suppose that they differ from the regular formations only in the boundary intervening between stem and suffix

(# for regular formations, + for the internal cases). This leads them to select a voiced underlying form for Pl, because of lives, baths, houses, but a voiceless underlying form for Pst, because of built, bet, slept.⁵ Delack 1971:205-8 criticizes these conclusions on the basis of the rules involved, and then extends the discussion by referring to the acquisition of forms by children and by questioning the characterization of voiceless consonants as unmarked in English.

On the first point, Delack 208f. notes Berko's 1958 observation that different functions of S are mastered by children at different ages (Gen and Prs before Pl), but concludes that this fact doesn't necessarily bear on the choice of underlying forms in adult speech. Delack doesn't discuss Berko's further observation that different alternants are mastered at different ages ([z] and [s] before [ɪz]); the implications of acquisition studies of English morphology (for instance, the items cited by Ferguson and Slobin 1973:210f. introducing Anisfeld and Tucker 1968) for phonological analyses have not, in fact, been carefully examined.

On the second point, Delack 209f. uses differences in voicing onset time in different languages to suggest that voiceless stops might be unmarked in some languages, voiced stops in others (English, for instance). But the connection between markedness, whether universal or language-particular, and the content of underlying forms has not been clarified.

Hoard and Sloat 1973a reassess the role of internal Psts in deciding on underlying representations for the Pst suffix:

In Sloat & Hoard 1971, we posited /t/ as the underlying form for the regular preterit marker; this is suggested by the internally suffixed preterits dealt, spelt, burnt etc. However, we failed to assess correctly the role of such internally suffixed preterits as sold, told, said, and heard. Both these groups of preterits can be accounted for in a general way only by positing an underlying /d/ for the preterit suffix, plus a rule of devoicing. The devoicing rule can be stated informally as $d \rightarrow t / [+consonantal, -syllabic] + _\#$. (113f.)

They continue to assign the same underlying segment to the regular and internal Pst suffixes (and to the regular and internal Pls), so that regular verbs (and the irregular bring, think, teach, catch, seek, and beseech) have the suffix /#d/.

In their latest treatment of the English inflectional endings, Sloat and Hoard 1973 maintain /d/ for Pst, but opt for /ɪz/ instead of /z/ for Pl (perhaps for Gen as well; I have not seen a written version of this paper, and various details of the analysis are not clear to me). Their rejection of /z/ is based primarily on the nature of the schwa insertion rules in their earlier analyses:

(3) $\phi \rightarrow \emptyset$ / $\begin{bmatrix} -\text{son} \\ +\text{cor} \\ -\text{dist} \\ \text{astri} \end{bmatrix}$ — # $\begin{bmatrix} -\text{son} \\ +\text{cor} \\ -\text{dist} \\ \text{astri} \end{bmatrix}$ #

They hypothesize that two paired variables cannot both occur in the environment of a rule (as is the case with the paired variables [astri] in (3)). Their new analysis also eliminates two other peculiar features of the earlier treatments: the insertion of schwa by (3) as part of the stem rather than the suffix (note the criticism in Miner 1972:25), and the assimilation rule

(4) $[avcd] \rightarrow [-avcd] / [-avcd] \#$.

All the Hoard and Sloat analyses treat internal Pls as involving an intervocalic voicing rule also manifested in forms like worthy, brevity, mischievous, and (in some dialects) greasy. As Delack 1971: 206 points out, using intervocalic voicing this way with an underlying /+z/ for internal Pls requires including z as a possible second 'vowel', which is quite unnatural; this difficulty is avoided with underlying /+iz/, as in Sloat and Hoard 1973. But the intervocalic voicing analysis is not the only one that has been suggested. Lightner 1968:58-60 reviews three others: an analysis with a morphophoneme /F/ in knife (as opposed to /f/ in chief); one in which the morpheme knife is marked as undergoing voicing of its final spirant before the Pl suffix, while the morpheme chief is marked as not undergoing such a rule; and one in which knife is marked as undergoing a minor rule (Lakoff 1970b:ch. 5) voicing final spirants before Pl. The first analysis follows comments by Swadesh and Voegelin 1939 and Harris 1942, the second is essentially an alternative analysis offered by Harris, and the third is Lightner's revision of this. The Sloat and Hoard solution differs from all three of these approaches in that their voicing rule is phonologically motivated rather than arbitrary (their minor rule is the morphological rule that specifies a + rather than a # boundary before Pl for certain morphemes).

The spirant voicing in internal Pls may or may not be related to other voicing alternations in English. Chomsky and Halle 1968:213, 232f. consider both possibilities, without coming to a decision, for pairs like choice/choose, cloth/clothe, safe/save, life/live: either their rule devoicing z before the suffix -ive (as in abusive, evasive) is extended to voice spirants in derived forms (marked [+ ϕ]), or their rule voicing s in an assortment of positions, largely intervocalic, is extended to voice spirants in the environment V__V, with this voicing rule triggered by a final lax /e/, later elided, in forms like clothe.⁶ In a longer discussion of the problem of derived forms, Chambers 1971 rejects the extension of intervocalic voicing to the ϕ -subclass, arguing that instead there is a special voicing rule that applies to deverbal nouns. If Chambers' analysis is correct, the ϕ -subclass has no bearing on the inflectional endings.

Thus far, we have seen the presentation of the vowel analysis by Luelsdorff and Zwicky, followed by counterarguments and reanalyses by Lightner, Shibatani, Delack, Hoard, and Sloat. In return, some

support for the vowel analysis has been advanced recently by Guile 1972 and Miner 1972; the latter work has been responded to by Cohen and Utschig 1973. I now review this material briefly.

Guile's defense of the vowel analysis arises from his hypothesizing that vowel epenthesis rules always break up some 'non-obstruent' clusters (consonant clusters containing at least one non-obstruent consonant) and that vowel syncope rules creating consonant clusters always create some nonobstruent clusters. He cites rules in English (the fast speech rule also discussed in Zwicky 1972 under the name Slur), Georgian, and Old Norse to support the syncope hypothesis, and concludes his article by remarking that in the case of the English inflectional endings

a putative rule of vowel epenthesis would have introduced a vowel breaking up exclusively obstruent clusters. But this runs counter to the independently motivated principle of universal grammar which defines what a possible rule of vowel epenthesis is. Hence, the facts of English must be accounted for by a rule of vowel syncope. (468).

However, the two universal hypotheses need careful validation. There is a possible counterexample to the syncope hypothesis in Japanese (see Ohso's 1973:13 discussion of a fast speech deletion of high vowels in the environment [-vcd]_([-vcd], #)--an extension of a devoicing rule), and an epenthesis rule restricted to obstruent clusters would not be phonetically implausible, though I have no good examples.

Miner carefully reviews most of the literature and presents two new arguments for the vowel analysis: (a) that given the Unordered Rule Hypothesis (Koutsoudas, Sanders, and Noll 1971, and other items cited by Miner), the underlying forms /ɪz/ and /ɪd/ lead to the simplest grammar (sec. 3), and (b) that the phonology of forms in -edly and -edness supports the choice of /ɪd/ rather than /d/ (sec. 5). With respect to (b), Miner notes that contrasts like resignedly versus determinedly indicate that the realization of -ed (before -ly or -ness) as [ɪd] or [d] is correlated with ultimate or penultimate stress on the root, respectively. He then argues that an insertion rule for Pst = /d/ and resignedly is much more complex than a deletion rule for Pst = /ɪd/ and determinedly. Nevertheless, even his deletion rule is scarcely simple:

$$(5) \quad \pm + \emptyset / \langle \text{-stress} \rangle C_0 \left[\begin{array}{c} +\text{son} \\ -\text{cor} \\ +\text{dist} \\ \text{astri} \end{array} \right] \# _ \left[\begin{array}{c} -\text{son} \\ +\text{cor} \\ -\text{dist} \\ -\text{astri} \end{array} \right] \# \langle +\text{seg} \rangle_1 \#$$

Cohen and Utschig begin their discussion (sec. 2.1) of the inflectional endings by arguing against /s/ and /t/ as the underlying forms for S and T. They maintain first of all that the voicing assimilation rule required in this analysis, namely

$$(6) [-son] \rightarrow [+vcd] / [+vcd] \# __\#$$

is implausible (a) because it claims that /s/ and /t/ voice by virtue of the voicing of preceding sonorants, even though English permits both voiced and voiceless obstruents after sonorants, and (b) because it claims that /s/ and /t/ voice by virtue of the voicing of preceding stem-final vowels, a 'specious generalization'. They continue with a version of Lightner's argument against voiceless underlying forms--that either the vowel in /ɪz/ and /ɪd/ must be inserted as part of the stem, or else /s/ and /t/ must be made to assimilate in voicing to the epenthetic vowel as well as to stem-final vowels. The first criticism, however, is not very strong, since assimilation in voicing to any preceding sonorant (including vowels) is not unparalleled; a classical Sanskrit (regressive) analogue is well known: 'In external combination...an initial sonant of whatever class, even a vowel or semivowel or nasal, requires the conversion of a final surd to sonant' (Whitney 1960:sec. 157c).

Cohen and Utschig then give four objections to the /əz/ and /əd/ analysis of S and T. Three have to do with the form of the syncope rule required by Miner, the fourth with Miner's argument based on the Unordered Rule Hypothesis (URH). The syncope rule in question (adopted from Sloat and Hoard 1971) is a subpart of (5):

$$(7) \text{ə} \rightarrow \emptyset / \left[\left\{ \begin{array}{l} +son \\ -cor \\ +dist \\ astri \end{array} \right\} \right] \# __\left[\begin{array}{l} -son \\ +cor \\ -dist \\ -astri \end{array} \right] \#$$

Cohen and Utschig's objections are as follows: (a) the rule (7) is ad hoc and implausible, a result of the fact that the contents of the curly braces in (7) don't constitute a natural class; (b) rule (7) doesn't collapse with another syncope rule presented by them, namely a deletion in the final syllable of titan, metal, atom, angel, minister (cf. titanic, metallic, atomic, angelic, ministerial); and (c) the combination of alpha variables and curly brackets in (7) is uninterpretable according to the conventions of Chomsky and Halle 1968. The first and third objections don't take into account the fact that the formulation of rule (7) is transparently an attempt to avoid stating a negative environment,⁷ as in

$$(8) \text{ə} \rightarrow \emptyset / - \left[\begin{array}{l} -son \\ +cor \\ -dist \\ astri \end{array} \right] \# __\left[\begin{array}{l} -son \\ +cor \\ -dist \\ astri \end{array} \right] \#$$

or, better,

$$(9) \text{ə} \rightarrow \emptyset / \# __\left[-son \right] \# \text{ except } / \left[\begin{array}{l} +cor \\ -dist \\ astri \end{array} \right] \# __\left[\begin{array}{l} +cor \\ -dist \\ astri \end{array} \right] \#$$

or even:

(10)	[]	#	a	[-son]	#	
	1	2	3	4	5		unless 1 and 4 are
			↓				
			ø				

+cor
-dist
astri

Cohen and Utschig's second objection is not necessarily weighty, since a language might have several distinct syncope (or epenthesis) rules. Moreover, their syncope rule for titan et al. is not very plausible phonetically (it deletes *a* between C and [+cons]#); neither is Miner's syncope rule, of course, but Miner's rule refers to word-internal # and is therefore clearly a morphophonemic rather than phonological (or 'allophonic') rule. A phonetically plausible alternative analysis of the titan cases would be to derive the final syllabic resonant (R) from a full vowel plus resonant (VR) via vowel reduction (əR), vowel assimilation (RR), and monophthongization (R); see the discussion of 'pseudo-syncope' in Semiloff-Zelasko 1973.

The remaining Cohen-Utschig objection to Miner's analysis concerns the URH. They point out (sec. 2.2) that Miner's syncope rule and an English flapping rule should (under the URH) apply simultaneously, to yield *[bæDz] from /bæt#əz/ bats. However, it is possible to maintain, with King 1973:567f., that languages have both phonological rules and ('low-level') phonetic rules and that all of the former precede all of the latter.⁸ If the inflectional syncope rule is a phonological rule and flapping is a phonetic rule, then there is no ordering problem. Still another way to account for the interaction between flapping and the inflectional syncope rule would be to use the fact that flapping is optional for many speakers, while the inflectional syncope rule is obligatory for all speakers. Then, by a principle of applicational precedence due to Ringen 1972, in forms to which both rules would be applicable the obligatory rule (syncope) applies first; after this the optional rule may apply if its conditions are still satisfied. In the case at hand the optional rule (flapping) would no longer be applicable, for syncope would have removed the conditions for its application.

Cohen and Utschig then confront a potential conflict between the URH and the vowelless analysis of the English inflectional endings: if /çʌç#z/ underlies churches, then both epenthesis and devoicing ought to apply simultaneously, giving *[çʌçəs]. In this case they appeal to a distinction between (phonological) epenthesis and (phonetic) devoicing; devoicing, they claim (following Harms 1973), is not only phonetic but also universal, hence not really a 'rule' of English at all but rather a physiological process. Miner 1972:fn. 3 disputes this treatment of devoicing, pointing out that the physiological requirements would be equally satisfied by the voicing of a stem-final voiceless obstruent or by the insertion of a vowel⁹ as by the devoicing of a suffixal voiced obstruent. Devoicing might nevertheless be treated as a phonetic, rather than phonological, rule of English (like flapping in the discussion above).

This concludes the list of items concerned with selecting an underlying form for some or all of the inflectional endings in English. None of the writers surveyed here gives an argument for a particular vowel in the endings, though the vowels favored by supporters of the /Vz/ and /Vd/ analyses are i (Lightner 1970, Sloat and Hoard 1973b) and ɪ (Luelsdorff, Lightner 1968, Miner). Supporters of the /z/ and /d/ analyses write epenthesis rules that insert 'neutral' vowels, ɪ or ə.

One remaining problem area is the GenPl. As it is put in Dr. Latham's English Language (cited by Bombaugh 1961:256), 'In the plural number, however, [the genitive] is rare; so rare, indeed, that whenever the plural ends in s (as it always does) there is no genitive'. Kruisinga 1932:sec. 829 echoes this conclusion:

The genitive suffix is never added to nouns with a plural suffix, no matter whether this is final or not. Thus the plurals fathers, fathers-in-law, and such groups as the queens of England never take a genitive suffix, although the groups father-in-law or queen of England do...We can state this in another way: English has no genitive plural. The explanation of the apparent exceptions men's, women's, children's has already been given...It may be added here that the plurals lice, mice, and geese, though formally isolated from the noun-stems, do not take a genitive suffix either.

That is, regular nouns have the GenPl identical to the Pl (although Delack 1971:fn. 7 reports forcing items like Joneses [ˈjɔːnzəzəz] from informants), a fact that could be given a generative account in several ways--for instance, by a rule simplifying the sequence of morphemes S + S, by a rule simplifying the clusters sz, zz, sz, etc. (see footnote 9), or by a condition preventing segmentalization of the Gen suffix in regular Pl forms (recall the discussion in section A above). Kruisinga, however, maintains that Gen and Pl don't occur together even in irregular forms; of the umlaut plurals men, geese, teeth, feet, lice, mice, and women, he says, 'These plurals with vowel-change must be looked upon as suppletive, rather than inflectional, forms. All of them that denote persons: men, women, and children, are so completely isolated from the corresponding singular that they can take a sibilant suffix to serve as a genitive: men's, women's, children's' (sec. 761). I do not understand this claim. Moreover, as pointed out in Zwicky 1969:419, there are other acceptable irregular GenPls: oxen's, addenda's, both sheep's, seraphim's, etc. Apparently all zero-Pl and those irregular-Pl nouns with Pls ending in sonorants have GenPl forms, while the few irregular Pls ending in obstruents (feet, teeth, mice, geese, lice) do not (*feet's, *teeth's, etc.).

Kruisinga's account also rules out phrases like *the queens of England's because these would be cases of a Gen suffix added to nouns with a (nonfinal) Pl suffix. However, the occurrence or nonoccurrence of the Pl suffix is irrelevant, as can be seen from cases with umlaut or zero Pls: The man I mentioned's golf score is usually quite low

vs. *The men I mentioned's golf scores are usually quite low, Any sheep from Calgary's wool is beautiful, *All sheep from Calgary's wool is beautiful. Apparently, the GenPl is unacceptable whenever the NP in question doesn't end in its head N, as in the examples already cited and in A passer-by's arms were hurt in the accident vs. *Two passers-by's arms were hurt in the accident. That is, plurality is associated with the head word of an NP, genitivity with the final word of an NP, and to be acceptable, GenPl NPs must have Gen and Pl associated with the same word (whether or not Gen and Pl are realized as suffixes). The implications of these facts about GenPl NPs for the morphological description of English need further study.

Footnotes

*This work was supported in part by the John Simon Guggenheim Memorial Foundation.

1. I do not consider analyses in which there is no attempt to fix on a single underlying form (or to argue that several distinct underlying forms are needed), as when Bloch 1947 simply lists the automatic alternants of the Prs suffix (Prs is represented as /z/, but as Bloch says in sec. 3.2 of the paper, this is merely 'to simplify the listing'). Nor do I consider analyses in which two or more distinct underlying forms are set up for the regular alternants of the Pst and PstP suffixes because of internal Psts like dwelt and put, in which the t-d-ɪd alternations are nonautomatic--analyses like those of Bloch and of Juillard and Macris 1962:ch. 2, which set up three morphemes for Pst (one for the alternants d and ɪd, one for t in both regular and internal Psts, and one for Ø in both internal and irregular Psts) and four for PstP (the three above plus one for the alternants n and ɪn).

2. This is not quite true, since (as Silva and Zwicky 1973: sec. 2.2) point out, certain idioms with a markedly casual style require auxiliary reduction: You're telling mé!, So's your old man! How's your ass?

3. On the other hand, it has sometimes been argued that facts that might seem to motivate rules with opposite effects do not really do so, as when Eliasson 1972 maintains that Swedish alternations between unstressed e and Ø don't motivate both a syncope and an epenthesis rule, but only several syncope rules.

4. Compare the discussion by Mulder 1968:196, where the failure of automatic alternation is taken to motivate distinct phonological forms for the regular English Pl:

...the English forms 'eggs' /egS/ and 'sacks' /sakS/ are straightforward cases of neutralization of opposition between /s/ and /z/, because such forms as /...gs/ and /...kz/ are structurally not possible.

However, in the English forms 'sins' /sinz/, 'ells' /elz/, and 'plays' /pleiz/, matters are different, because such forms as 'since' /sins/, 'else' /els/, and 'place'

/pleis/ can also occur. The expression of the plural morpheme in English apparently has three regular forms: /S/, /z/, and /iz/. Because /S/ represents both /s/ and /z/, however, /S/ and /z/ are not allomorphs in respect to each other. In fact, therefore, the English plural morpheme has only two regular phonological forms, i.e. /S/ or /z/ on the one hand and /iz/ on the other. The prediction of /z/ and /iz/ belongs to the domain of morphophonology; the prediction of /S/ belongs to phonology proper.

In respect of /iz/, though /s/ cannot follow a phoneme of the hissing and hushing order, there is, however, no phonological rule which prohibits /s/ from following /i/. Therefore, also /iz/ is a phonologically determined variant of a certain morpheme, i.e. it is a case of semi-phonological determination.

5. Miner 1972:26-8 notes a difficulty with assuming that the internal formations result from a change of boundary from # to +: sometimes it is the stem, sometimes the suffix, that is responsible for this change. Such a manipulation of boundaries goes beyond a proposal put forth by Stanley 1973:202-6, according to which only affixes could trigger the demotion of boundaries.

6. It is also possible, of course, that some forms require one treatment, some the other.

7. Negative environment statements in phonology have been proposed by Zwicky 1970b and Sampson 1973, among others. Zwicky 1970b notes that negative environment statements and curly brackets can be traded for one another in many cases, while Zwicky 1970c observes that curly brackets and paired alpha variables can be traded for one another in certain cases. Consequently, the issues at hand in this bibliography are tied to the curly brackets problem; see the discussion in McCawley 1971.

8. For King, this assumption eliminates a large number of putative historical changes in which rules would be added within the phonological component of a language.

9. Or by simplification of the final cluster, as evidenced in English in forms like long [lɒŋ] < /long/, Black English and general casual [kɔwɪ] cold, and perhaps (as pointed out to me by G. K. Pullum) the Chinese/Dutch/Irish/Swiss as opposed to the Indians/Israelis/Greeks/Yugoslavs.

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